

Using PCAST Report To Litigate “Feature Comparison” Techniques: A Legal Framework

Forensic Science College 2017

Hon. Nancy Gertner & Barry Scheck

Feature Comparison Disciplines Reviewed By PCAST



**Hair
Evidence**



Who are the Authors? Real Scientists



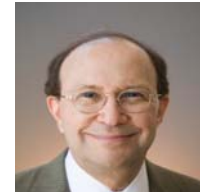
Eric Lander
Genetics/Mathematics
Harvard/MIT



Susan Graham
Biomedical Engineering
Berkeley



Daniel Schrag
Geology
Harvard



William Press
Computational Biologist and
Computer Science U. Of Texas



S. James Gates
Mathematics/ Physics ("String Theory")
U. of Maryland



J. Michael McQuade
Senior VP United Technologies Ph.D
Physics Carnegie Mellon

Who is the Intended Audience?



Judges and Science

Independence of the judiciary a resonant meme for our time – let's hope!

National commission on forensic science abolished

- But it's "views" documents & recommendations live on -- not yet scrubbed from internet

Hopefully judges will be increasingly suspicious of "science denial" arguments by state



Judges and Science

Personal Favorites For PCAST Litigation Purposes...

- Rec On Term “Reasonable Degree Of Scientific Certainty”
 - If This Is Meaningless, Then Reasonable Degree Of Ballistic Certainty Or Fingerprint Certainty?
- Rec On Pretrial Discovery
- Rec On Documentation, Case Record, And Report Contents
- Rec On Technical Merit Of Forensic Science Methods & Practices
- Rec On Proficiency Testing
- Rec On Code Of Ethics For Forensic Scientists, Including The Duty To Correct And Notify
- Views Doc On Ensuring Forensic Analysis Is Based On Task Relevant Information

Judges and Science

NAS 2009

- DNA only validated forensic discipline
- Claims of unique source identification and zero error rates in feature evidence disciplines unfounded

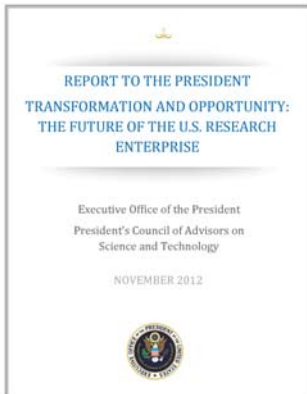
But NAS 2009 never told judges specifically what to do in the “interim,” in the period before subjective disciplines were validated

- Without guidance, experts allowed to testify to “reasonable degree of ballistic or fingerprint certainty”

PCAST Report very specific and strategic in messaging

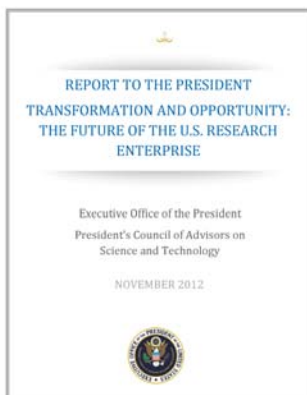
“Foundational Validity” And “Validity As Applied” Specifically Defined

PCAST - Foundational Validity



Foundational validity for a forensic-science method requires that it be shown, based on empirical studies, to be repeatable, reproducible, and accurate, at levels that have been measured and are appropriate to the intended application. Foundational validity, then, means that a method can, in principle, be reliable. Meant to correspond to Rule 702(c) (PCAST p.4-5)

PCAST - Validity As Applied



Validity as applied means that the method has been reliably applied in practice. It is the scientific concept we mean to correspond to the legal requirement, in Rule 702(d), that an expert “has reliably applied the principles and methods to the facts of the case.” (PCAST p. 5)

How is Foundational Validity Demonstrated?

Objective Methods

By conducting studies to measure accuracy, reproducibility, and consistency of each step of the method.

(Examples: single source DNA, simple DNA mixtures, toxicology)

Subjective Methods

Because the individual steps are not specified, the method must be evaluated by black and possibly white box studies.

(Examples: fingerprints, ballistics, toolmarks, shoeprints, bite marks, complex DNA mixtures)

"Statements claiming or implying greater certainty than demonstrated by empirical evidence are scientifically invalid."
(PCAST p. 6)

Practical Punchline

Unless there are at least two appropriately designed black box studies demonstrating false positive and false negative error rates, *opinion* of subjective discipline expert inadmissible

How is Validity as Applied Established?

The examiner must show he/she is capable of reliably applying the method and must have actually done so.
(Rigorous Proficiency Testing on Case-like Samples)

The examiner must accurately report the overall false positive rate and sensitivity (true positive rate).

Demonstrate the samples used in the foundational validity studies are relevant to the samples in the case.

Practical Punchline

Need At Least Two Appropriate Black Box Studies

Need To Demonstrate Capable Examiner

Need To Show Samples Used In Black Box Studies Were The Kind Of Samples Used In This Case

- Example: Judge Rakoff Handwriting decision -- error rate studies for someone disguising their own signature very different than forgery detection.
 - Almeciga v. CIR 1:15 –cv-04319 JSR (5/6/16)
- Smudged fingerprint mark known to be difficult to analyze
- Unusual type of bullet or gun, or very common bullet or gun could present problems
- This why “white box” studies will be helpful

Judges and Science

PCAST'S Intellectual Moves (P. 40-43)

Amended Rule 702 -- experts can offer opinion testimony if:

- ...will help trier of fact
- The testimony is based on sufficient facts or data
- The testimony is based on reliable principles and methods; and
- The expert has reliably applied the principles and methods to the facts of the case.

Judges and Science

PCAST: Judges make decisions about legal standards but...

“[T]he overarching subject of the judge’s inquiry under rule 702 is “scientific validity.” It is the proper province of the scientific community to provide guidance concerning the scientific standards for scientific validity.”

Argument applies in all states where there is rule 702 provision, whether *Daubert*, *Frye*, or hybrid test.

Applies To *Kumho Tire* Analysis

Without empirical testing opinion not scientific, not reliable

PCAST on empirical testing for specific propositions

Scientific validity and reliability require that a method has been subjected to empirical testing, under conditions appropriate to its intended use, that provides valid estimates of how often the method reaches an incorrect conclusion.

For subjective feature-comparison methods, appropriately designed black-box studies are required, in which many examiners render decisions about many independent tests (typically, involving “questioned” samples and one or more “known” samples) and the error rates are determined.

Without appropriate estimates of accuracy, an examiner’s statement that two samples are similar—or even indistinguishable—is scientifically meaningless: it has no probative value, and considerable potential for prejudicial impact. Nothing—not training, personal experience nor professional practices—can substitute for adequate empirical demonstration of accuracy.

(PCAST P. 46)

Will this “if not empirical testing not reliable” argument work?

Under *Daubert*?

- What about *Kumho Tire*?
- Will subjective feature evidence be admitted as reliable technical evidence?

What about *Frye* and hybrid jurisdictions?

What about 403 prejudice arguments?

Will this “if not empirical testing not reliable” argument work?

How will it play with juries?

- Error rates might make a big difference
 - Pacheco case San Diego – fingerprint error rate: not guilty
 - Firearm error rates admitted in Mass. - Convictions

But will failure to calculate error rates when one could do so with black box studies make a difference?

Better to establish thru impeachment, limitation of opinion, jury instruction, getting PCAST report into evidence – all of the above?

Will this “if not empirical not reliable” argument “work”?

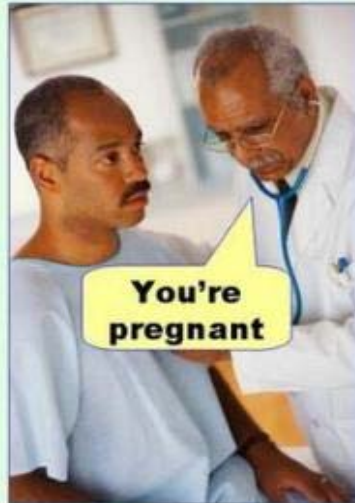
Yes, because it’s common sense

- Jury has a right to know how often expert gets the analysis they are putting forward right or wrong
- If there is a simple appropriate way to find the false positive or false negative error rate, why not do it?

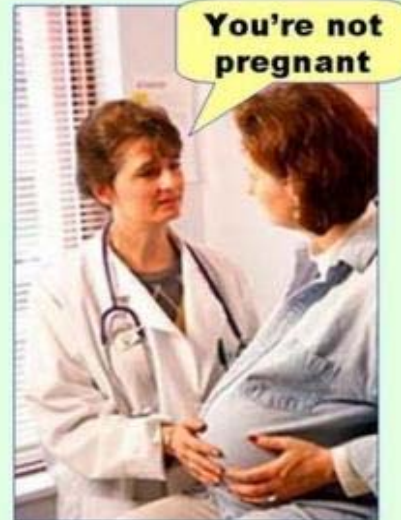
Yes, because willing judges will see forensic experts have been given a specific, achievable roadmap but refused to take it

Sort of, because courts will just adopt error rates from questionable studies and say admissibility issues go to weight

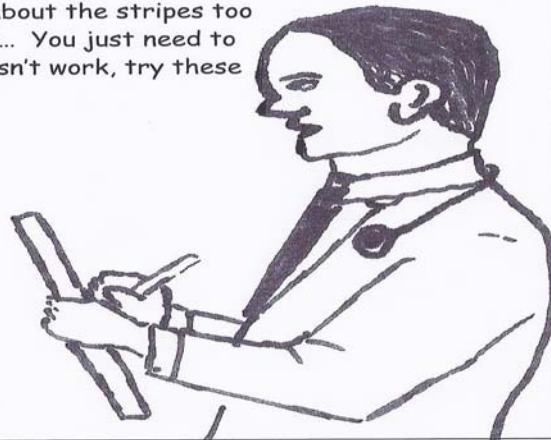
**Type I error
(false positive)**



**Type II error
(false negative)**



You're a perfectly healthy horse* except for those stripes. But I wouldn't worry about the stripes too much. We see this sometimes... You just need to diet and exercise. If that doesn't work, try these antidepressants.



*Medical school mantra: "When you hear hoof beats, think horses, not zebras." ~ Dr. Theodore Woodward

But...Neither experience, nor judgment, nor good professional practices can substitute for actual evidence of foundational validity and reliability. (PCAST p. 6)

Getting a hearing – *Daubert, Kumho* - 1

Daubert - 5 Factors (PCAST directly addresses)

- Technique testable and tested
- Peer review
- ***Known or potential error rate of method***
- Existence of standards controlling technique's operation
 - Scientists define standards for scientific validation
- General acceptance
- *Bust see, State v. Hiral Patel*, No. LLICR 130143598S, 2016 WL 8135385 (Conn. Super. Ct., Dec. 28, 2016) (PCAST's review of shoeprint evidence no basis for suppression, doesn't warrant hearing. Relies on previous Conn. Supreme Court ruling on shoeprints, rejects PCAST as authority, no indication PCAST aware of Conn. Supreme Court analysis, relies on local shoe print expert who doesn't agree with PCAST because didn't take into account all available research on shoeprints).

Getting a hearing – *Daubert, Kumho* - 2

But what about *Kumho Tire v. Carmichael*, 526 US 137 (1999)?

Is non-scientific "technical" knowledge of experts based on "experience" reliable for "the task at hand?"

- Held, *Daubert* factors should be reviewed where "they are reasonable measures of the reliability of the expert testimony," *Id.*, at 152.
- "...some of *Daubert*'s questions can help evaluate the reliability even of experienced based testimony. It would be appropriate for the trial judge to ask, for example, *how often an engineering expert's experience based methodology has produced erroneous results...*" *Id.*, at 151(emphasis added)
- Empirical basis for error rates crucial.
- Great latitude on ultimate reliability determination and how it is determined, *Id.*, at 142, citing *General Electric v. Joiner*, 522 US 136, 143 (1997)

See, *People v. James Genrich*, No. 2016 CA 651 (Colo. App. 2017) (Error to deny post conviction hearing in tool mark case citing PCAST that 100 certainty opinion "scientifically indefensible.")

Judge Rakoff on Handwriting – Part 1

ALMECIGA V. CIR 1:15 –CV-04319 JSR (5/6/16)

- Template for using PCAST like error rate attack and cog bias concerns to preclude *Kumho* admissibility ruling
- FBI commissioned study show experts moderately better than lay people in identifying forgeries as forgeries
 - Experts: 96% True Positive, .5% False Positives
 - Lay: 92% True Positive, 6.5% False Positive
 - Controversy over methodology

Judge Rakoff on Handwriting – Part 2

- **But the task at hand here was to determine whether signatures that do not look like plaintiff's purported known were not authored by plaintiff**
- **Disguised writing studies have unacceptably high error rates**
 - Comparisons of the "known" signature of an individual in his natural hand to the "questioned" signature of the same individual in a disguised hand, 46% false positive, 30% true positive, 46% inconclusive.

Judge Rakoff on Handwriting – Part 3

Cited use of domain irrelevant information by plaintiff counsel to bias expert

- Stated flatly questioned doc A forgery
- Produced known, expert didn't get on independently
- Wanted rush job, appeal to sympathy and flattery

Judge Rakoff on Handwriting – Part 4

"I understand that we are asking a lot, in a short period of time, however, this is what we need, and you're the expert that we want and feel comfortable working with. You were a rock star for us at our last case! We are asking the same performance here. Our client was really taken advantage of by this Defendant, and it put her, and her young children in danger, and we need your help to right this wrong. If you need anything else, please let us know. We can't thank you enough."

Getting a hearing – *Frye* Jurisdictions – Part 1

Generally accepted as reliable in relevant scientific community

- Arguably more demanding than *Daubert* because need a consensus
- Restricted to “novel” scientific evidence? Feature evidence already settled?
 - Legal precedent is not scientific precedent
 - Focus on 702 foundational evidentiary objection to reliability of the opinion
 - Without error rate opinion more prejudicial than probative

Getting a hearing – *Frye* Jurisdictions – Part 2

Often *Frye* jurisdictions have “validity as applied” type case law

- No black box study, not valid as applied

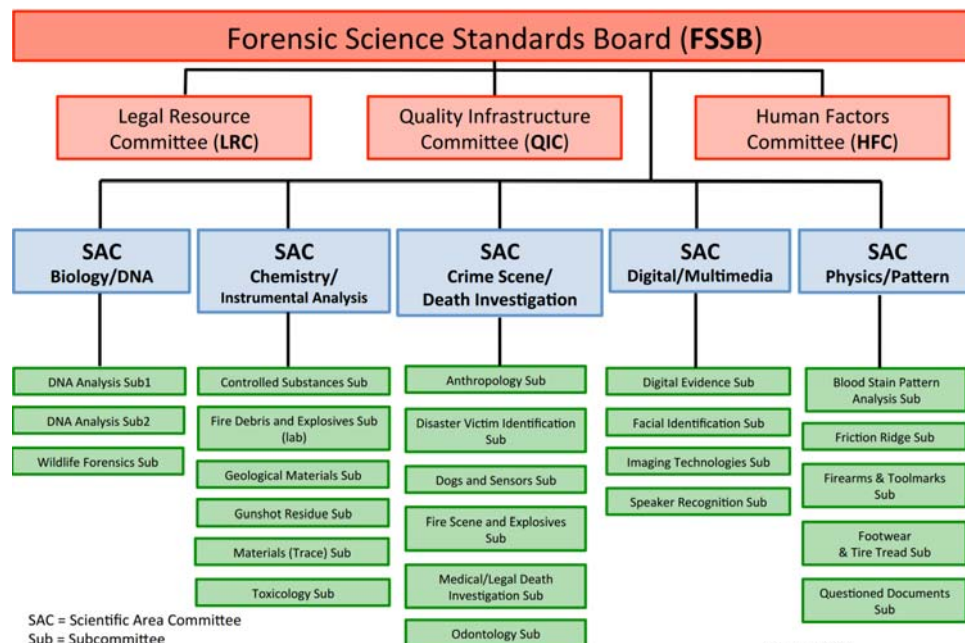
See, *Motorola v. Murray*, 147 A.3d 751 (DC 2016) (As DC switches from *Frye*/*Dyas* to *Daubert*/*Kumho* Court makes clear “no grandfathering” based on old precedent. Forensic evidence will be subjected to “more scientifically demanding analysis,” and Easterly, J. concurring specifically cites PCAST.)

Getting a hearing – *Frye* Jurisdictions – Part 3

What is the relevant scientific community for PCAST experts?

- Statistics, Metrology, Experts in Scientific Method
- Where can you find them?

OSAC



www.nist.gov/forensics/upload/orgchart3-18-14-new.pdf

Oct. 29, 2014

OSAC org chart somewhat helpful on key legal question...

What is the relevant
scientific community
for general acceptance?

But will need real statisticians, metrologists, experts on
scientific method in and out of OSAC

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News
New NIST Center of Excellence to Improve Statistical Analysis of Forensic Evidence, 05/26/15

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Overview

The Forensic Science Center of Excellence, awarded to a consortium led by Iowa State University in May 2015, supports NIST's efforts to advance the utility of probabilistic methods to enhance forensic analysis.

Statisticians on OSAC



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Statisticians Well-Represented on Forensic Science Reform Oversight Body

Statisticians Well-Represented on Forensic Science Reform Oversight Body

By [Steve Pierson](#) posted Fri, Nov 07, 2014 12:43 PM

NIST this week announced the final appointments to the [Organization of Scientific Area Committees](#) (OSAC), the NIST-administered body to strengthen forensic science through the identification and development of standards and guidelines. OSAC is composed of an oversight board, three resources committees, five committees, 24 subcommittees (see schematic below) and totals several hundred appointments of forensic science practitioners and administrators, researchers, professional association representatives, and industry representatives.

Recognizing the importance of statistics to bolstering the forensic sciences, statisticians are well represented in OSAC. This summer, Karen Kafadar, Hal Stern, Bruce Weir, and William Guthrie were appointed to, respectively, the [Forensic Science Standards Board](#), the [Physics/Pattern](#) Committee, the [Biology/DNA](#) Committee, and the [Chemistry/Instrumental Analysis](#) Committee. On November 3, members of most of the subcommittees were announced and the following statisticians were among the appointees:

- Sandy Zabell appointed to the [DNA Analysis 2](#) subcommittee
- Lee-Ann Hayek appointed to [Wildlife Forensics](#) subcommittee
- Martin Wells appointed to [Geological Materials](#) subcommittee
- Alicia Carriquiry appointed to [Materials \(Trace\)](#) subcommittee
- Max Morris appointed to [Firearms/Toolmarks](#) subcommittee
- Chris Saunders appointed to [Questioned Documents](#) subcommittee
- Haonan Wang appointed to [Bloodstain and Pattern Analysis](#) subcommittee
- Haili Iyer appointed to [Friction Ridge](#) subcommittee
- Connie Borror appointed to [Toxicology](#) subcommittee
- Mark Johnson appointed to [Fire Scene and Explosives](#) subcommittee
- James Curran invited as guest to [DNA Analysis 1](#) subcommittee

Statisticians have also been appointed to other important forensic science panels. In January, Stephen Fienberg was named to the newly established [National Committee on Forensic Science](#) (NCFS), a federal committee jointly overseen by NIST and the U.S. Department of Justice. Following her appointment this fall to the [Forensic Science Standards Board](#), Kafadar was named to the NCFS Scientific Inquiry and Research Subcommittee. In October, Stern was

<http://community.asha.org/blogs/steve-pierson/2014/11/07/statisticians-well-represented-on-forensic-science-reform-oversight-body>

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ASA Headlines

Rebecca Doerge: Latest Statistician Named Senior University Administrator

The statistical community congratulates **Rebecca Doerge for being named dean** of the Mellon College of Science at Carnegie Mellon University. Doerge joins a growing **list of statisticians in senior university administration positions** that includes a university president.

Data Science Tops List of Fields with Massive Potential

eCampus News examines **three burgeoning fields of study**, and data science comes in at number one for a field of study that leads to a "future-ready" career. The article, which considers data science a "continuation of some of the data analysis fields such as statistics, data mining, and predictive analytics," compiled data from a number of job-hunting and career services websites. Referencing the increasing demand for statistics and huge growth in statistics degrees, it serves as a helpful tool for students thinking about postsecondary opportunities. It also highlights areas in which colleges and universities could expand their focus on data science.

Four Statisticians Elected Members of the National Academy of Sciences

The American Statistical Association congratulates the following four ASA members, who were **elected members of the National Academy of Sciences**:

Steven Evans of the University of California at Berkeley
Susan Murphy of the University of Michigan
Larry Wasserman of Carnegie Mellon University
Nancy Reid of the University of Toronto

Other Recent Headlines

ASA Statement on P-Values Draws Attention

More than 108,000 views of the **ASA's Statement on P-Values and Statistical Significance** since it was released on Monday, March 7. Many science media outlets have picked up the story. Here are a few examples:

- **The National** (from the UAE)
- **Nature**
- **Science**
- **FiveThirtyEight**

Articles are popping up in more general media, as well. For example, the story was picked up on **Inside Higher Education** and **Vox**. And many people are blogging, tweeting, and posting.

ASA members have been posting to **ASA Connect** or writing directly to ASA Executive Director **Ron Wasserstein**. We want to hear from you about the statement, and we encourage you to spread the word through your networks, especially to those in your networks who are not statisticians, but are users of statistics.

The screenshot shows the SAMSI website. The header includes the SAMSI logo (NSF, Duke, NCSU, UNC) and navigation links: FORMS & RESOURCES, WORKING GROUPS, CONTACTS / DIRECTIONS / MAPS, a search bar, and a menu with PROGRAMS & ACTIVITIES, PARTICIPATING, PEOPLE, NEWS AND MEDIA, ABOUT, and CALENDAR. A breadcrumb trail reads: Home > About > What is SAMSI.

What is SAMSI

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What is SAMSI

The Statistical and Applied Mathematical Sciences Institute (SAMSI), was established in 2002. SAMSI is a partnership of Duke University, North Carolina State University (NCSU), the University of North Carolina at Chapel Hill (UNC), and the National Institute of Statistical Sciences (NISS), in collaboration with the William Kenan, Jr. Institute for Engineering, Technology and Science. SAMSI is part of the Mathematical Sciences Institutes program of the Division of Mathematical Sciences at the National Science Foundation. SAMSI is housed at the NISS/SAMSI building in the Research Triangle Park, North Carolina.

Mission

SAMSI's mission is to forge a synthesis of the statistical sciences and the applied mathematical sciences with disciplinary science to confront the very hardest and most important data- and model-driven scientific challenges.

Vision

SAMSI is a formulator and stimulator of research. It conducts programs that target areas most in need of attention and most amenable to high-impact progress. Both established and young researchers from academia, industry, national laboratories and government come to SAMSI to define the central problems and catalyze the research that addresses those problems.

Visiting researchers are resident at SAMSI for periods of a month to a year. Postdoctoral fellows participate at the crucial, formative stage of their careers. Graduate and upper level undergraduate students are provided unique insight into the formation of research areas and collaborations. Every SAMSI program conducts

Limiting the opinion – Part 1

Not a “scientific” opinion” – Should be easy.

- Fixes used in U.S v. Green, 405 F. Supp. 2d 104 (D. Mass. 2005)(Firearms, no error rates available), U.S. v. Starzecpyzel, 880 F. Supp. 1027, 1029 (S.D.N.Y. 1995) (handwriting, no error rates available):
 - Admit testimony "to the extent that [the expert] restricts her testimony to similarities or dissimilarities between the known exemplars and the robbery note" but prohibiting the expert from render[ing] an ultimate conclusion on who penned the unknown writing"
 - But if expert doesn't have underlying “pattern” data to show the jury, evidence inadmissible - Green

Limiting the opinion – Part 2

Should one even try?

- Will it hurt admissibility ruling?
- Courts tend to be satisfied with error rates coming in and going to weight. See, Commonwealth v. Legore, No. SUCR 2015-10363 (MA Super. Ct – Suffolk Co. Nov. 17, 2016 (Prosecution can present firearms expert but must present testimony about known error rates in Ames study, citing PCAST. No Daubert/Lanigan hearing necessary given past Supreme Court ruling allowing firearms experts to offer opinions to “reasonable degree of ballistic certainty”); Accord, Commonwealth v. Hernandez, Nos. SUCR 2014-10417 & 2015-10384 (MA Super Ct. – Suffolk Dec. 21, 2016)(Hearing denied, PCAST echoes concerns previously discounted from 2009 NAS Report. Goes to weight, can be raised in cross).
- See, US v. Gregory Chester, et. al., No. 13-CR-00774 (N.D. Ill. Oct. 7, 2016)(Daubert motion based on PCAST rejected because 2% false positive error rate in firearms does not require exclusion as a legal matter – combines Miami-Dade and Ames studies).
- Limitation is unlikely to be reversed as an abuse of discretion.

Limiting the opinion – Part 3

Very hard to come up with a limitation that isn't an implicit statement about a probability

- But perhaps there are lesser evil alternatives
- See, State v. Scott Goodwin-Bey, No. 1531-CR00555-01 (Mo. Cir. Ct.—Greene County Dec. 16, 2016)(Frye Court “reluctantly” admits firearms opinion in light of PCAST but analyst’s testimony is limited to claiming that the gun at issue “could not be eliminated as the source of the bullet.”)

Extreme statements still ripe for challenge

“Statements suggesting or implying greater certainty are not scientifically valid and should not be permitted.”

Never permit:

- “zero,”
- “vanishingly small,”
- “essentially zero,” “negligible,”
- “minimal,” or “microscopic” error rates;
- “100 percent certainty” or
- proof “to a reasonable degree of scientific certainty;”
- identification “to the exclusion of all other sources;” or
- a chance of error so remote as to be a “practical impossibility.”

Jury charges

That the testimony is not offered as scientific evidence.

Direct Factual Statement – That there was no empirical scientific proof about false positive and false negative error rates

“You may consider” approach --You may consider the absence of empirical proof of false positive and false negative error rates on the validity/weight of the testimony offered.

Getting PCAST into evidence

Hearsay exception

- Public Record under 803(8)(a)(iii)

Impeachment

- Learned Treatise on which expert relies 803(18)
 - What if they don't accept – read into evidence but not exhibit
- Training Materials

Through Defense Expert?

Making the PCAST record

Restriction or denial of use to impeach

Refusal to admit on defense case

Refusal to limit expert opinion

Failure to charge

Abuse of discretion?

Making PCAST record – Part 1

Preserve Constitutional issues (See IP Special Lit, Winston & Strawn Post Conviction Memo)

Brady/Napue

- Prosecution knows studies could have been done and will be done showing material evidence scientific evidence is far less probative than what they are presenting, and refuses to acknowledge this fact.
- The presentation of false evidence by the prosecution is a violation of Due Process. See *Napue v. Illinois*, 360 U.S. 264, 269 (1959) (“[I]t is established that a conviction obtained through use of false evidence, known to be such by representatives of the State, must fall under the Fourteenth Amendment.”).
- The false testimony need not constitute perjury. It is enough that testimony was misleading or created a false impression. *Alcorta v. Texas*, 355 U.S. 28 (1957). A traditional *Napue* claim will succeed when: (1) the testimony or evidence was actually false, (2) the prosecution knew or should have known that the testimony or evidence was actually false, and (3) the false testimony or evidence was material. *Sivak v. Hardison*, 658 F.3d 898, 908–09 (9th Cir. 2011) (internal citations omitted). Further, “[t]he same result obtains when the State, although not soliciting false evidence, allows it to go uncorrected when it appears.” *Napue*, 360 U.S. at 269.

Making PCAST record – Part 2

Use of False and Unreliable Scientific Evidence Fundamentally Unfair

- *Chambers v. Mississippi*, 410 U.S. 284, 294 (1973) (“The right of an accused in a criminal trial to due process is, in essence, the right to a fair opportunity to defend against the State's accusations.”); *Spencer v. Texas*, 385 U.S. 554, 563–564, (1967) (“Cases in this Court have long proceeded on the premise that the Due Process Clause guarantees the fundamental elements of fairness in a criminal trial.”); *see also United States v. Cronin*, 466 U.S. 648, 657 (1984) (“The right to the effective assistance of counsel is thus the right of the accused to require the prosecution's case to survive the crucible of **meaningful adversarial testing**.” (emphasis added))
- **3rd Cir.**: *Han Tak Lee v. Glunt*, 667 F. 3d 397 (3d Cir. 2012)(arson evidence);
- **6th Cir.**: *Ege v. Yukins*, 485 F.3d 364 (6th Cir. 2007) (bite mark evidence);
- **Texas**: *Ex Parte Turner*, 394 S.W.3d 513 (Tex. Crim. App. 2013) (Unreliable drug test)

Use Addendum to Defend Attack on PCAST

“National District Attorneys Association slams President’s Council of Advisors on Science and Technology report.”

The PCAST position regarding the use of forensic science is scientifically irresponsible. Adopting any of their recommendations would have a devastating effect on the ability of law enforcement, prosecutors and the defense bar, to fully investigate their cases, exclude innocent suspects, implicate the guilty, and achieve true justice at trial.

<http://www.ndaa.org/pdf/NDAA%20Press%20Release%20on%20PCAST%20Report.pdf>

Department of Justice

“The report does not mention numerous published research studies which seem to meet PCAST’s criteria for appropriately designed studies providing support for foundational validity. That omission discredits the PCAST report as a thorough evaluation of scientific validity.”

PCAST email

In September 2016, the President's Council of Advisors on Science and Technology (PCAST) released its Report to the President on "Forensic Science in the Criminal Courts: Ensuring Scientific Validity Of Feature-Comparison Methods." See

https://www.whitehouse.gov/sites/default/files/microsites/ostp/PCAST/pcast_forensic_science_report_final.pdf.

As a follow-up to this work, PCAST invites you to reply by Wednesday, December 14 to the following request:

Please identify any relevant scientific reports that (i) have been published in the scientific literature, (ii) were not mentioned in the PCAST report; and (iii) describe appropriately designed, research studies that provide empirical evidence establishing the foundational validity and estimating the accuracy of any of the following forensic feature-comparison methods, as they are currently practiced.

Please indicate how the scientific reports establish foundational validity and estimate the accuracy of the relevant method.

PCAST plans to review the findings of its Report in light of the additional relevant information.

Please send replies to pcast@ostp.eop.gov by December 14, 2016.

Sincerely, Eric Lander, Co-Chair, PCAST

PCAST addendum

Although our inquiry was undertaken in response to the DOJ's concern, DOJ informed PCAST in late December that it had no additional studies for PCAST to consider.